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[From the MEDICAL AND SURGICAL REPORTER,
September 6, 1890.]

ESTABLISHING TOLERANCE FOR THE TUBERCLE BACILLUS.

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In the *Medical News*, October 19, 1889, I advanced the idea that, to overcome infection by tuberculosis it would probably be necessary to produce a tolerance to the action of the tubercle bacillus and advanced the following hypotheses:

First. It is possible that, by a thorough filtering out of bacilli from tubercular material, a filtrate might be obtained and attenuated, so that by systematic inoculations a change might be produced in living animal tissues that would enable them to resist virulent tubercle bacilli.

Second. To bring about a chemical or physical change in living tissues that would resist tubercular phthisis, it is possible that inoculations with the bacillus would have to be made; yet, before this could be done, the power of the virulent bacilli would have to be diminished; otherwise the result would be disastrous.

I also stated that I had met with success in preventing subsequent susceptibility to phthisis by inoculating animals with what I believed to be an unusual form of the tubercle bacillus, and that I had succeeded in producing a marked morphological change in this bacillus, doing this by subjecting it to different degrees of temperature, moisture, pressure and changes in food stuffs.

It is quite impossible to state how this immunity was produced; yet it is quite possible that the organisms in the changed forms have not sufficient vitality to live in the animal economy, and, therefore, the only active portion of the matter injected is a chemical product carried in with the bacilli and which is poisonous to the ordinary tubercle bacillus. Or again, it is possible that the organisms themselves are antagonistic to the bacillus of Koch. It is also possible that this unusual form of bacillus produces, when in the animal economy, that which kills the tubercle bacillus. Or, we can believe it possible for this new form to consume that from the animal tissues necessary for the existence of the tubercle bacillus, and by a different metabolic process to form a product non-poisonous to animal life.

From the fact that we all inhale tubercle bacilli daily without contracting phthisis, except in odd cases where there is a predisposition or where a great number of bacilli are taken into the system, we are inclined to believe that a change, either chemical or otherwise, must take place in the normal tissues before we can contract the disease. If this be so, we must aim at correcting that change, and it seems within the range of possibilities that such a correction might be brought about by a chemical substance or by stimulating the tissues by micro-organisms, harmless in themselves either through their degree of vitality or their kind.

Be this as it may, it will probably be interesting to the scientific world to know that the results published last October have been uninterruptedly corroborated by a series of inoculations of the prepared virus into guinea-pigs, rabbits and opossums, after which they have resisted matter so virulent that all animals not previously inoculated with the changed virus took on tuberculosis when inoculated with it.

August 29, 1890.